UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

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| SKYHOOK WIRELESS, INC.,<br>Plaintiff,<br>v.<br>GOOGLE INC.,<br>Defendant. | CIVIL ACTION<br>NO. 1:10-cv-11571-RWZ |
| GOOGLE INC.,<br>Counterclaim-Plaintiff,<br>v.<br>SKYHOOK WIRELESS, INC.,<br>Counterclaim-Defendant. | |

**GOOGLE INC.'S FIRST AMENDED PRELIMINARY INVALIDITY CONTENTIONS**

Pursuant to the Parties' Joint Statement filed on December 7, 2010 and Local Rule 16.6, defendant Google Inc. ("Google") hereby serves its First Amended Preliminary Invalidity Disclosures for U.S. Patent Numbers 7,414,988 ("'988 patent"), 7,433,694 ("'694 patent"), 7,474,897 ("'897 patent"), and 7,305,245 ("'245 patent") (collectively, "patents-in-suit") on plaintiff Skyhook Wireless, Inc. ("Skyhook").

**PRELIMINARY STATEMENT, RESERVATION OF RIGHTS, AND GENERAL OBJECTIONS**

1. This preliminary disclosure is directed to invalidity issues only and does not address non-infringement, unenforceability, or claim construction issues. Google reserves all rights with respect to such issues.

2. These Preliminary Invalidity Contentions are preliminary and are based on Google's current knowledge, understanding, and belief as to the facts and information available

as of the date of these contentions. Discovery in this action is ongoing, Skyhook has not produced all requested documents concerning the inventions claimed, and Google has not completed its investigation, discovery, or analysis of information related to this action. While Google has made a good-faith effort to provide a comprehensive list of prior art relevant to this case, Google reserves the right to amend, supplement, or materially modify its prior art list and invalidity contentions as discovery progresses. This reservation of rights includes the right to supplement prior art under 35 U.S.C. §§ 102(a), (b), (c), (d), (e), (f), and (g), 103, 112 and based on information Google may learn during discovery in this case.

3. Google provides these First Amended Preliminary Invalidity Contentions prior to any claim construction ruling by the Court with respect to the claims of the '988, '694, '897, and '245 patents asserted by Skyhook in its Infringement Contentions. Any invalidity analysis depends, ultimately, upon claim construction, which is a question of law reserved for the Court. Google reserves the right to amend, supplement, or materially modify its prior art list and invalidity contentions after the claims have been construed by the Court. Google also reserves the right to amend, supplement, or materially modify its prior art list and invalidity contentions based on any claim construction positions that Skyhook may take in this case and as it discovers additional information. Google also reserves the right to assert that a claim is indefinite, not enabled, or fails to meet the written description requirement during or after the claim construction process, including based on any claim construction position Skyhook may take or based on any claim construction the Court may adopt in this case.

## FIRST AMENDED PRELIMINARY INVALIDITY CONTENSIONS

## I. IDENTIFICATION OF PRIOR ART

Skyhook accuses several of Google's products of infringing claims 1-3 of the '988 patent, claims 1 and 2 of the '694 patent, claims 1-4 of the '897 patent, and claims 1, 2, 4-6, 8 of the

‘245 patent (collectively, the “Asserted Claims”). *See* Plaintiff Skyhook Wireless Inc.’s Preliminary Infringement Disclosure at 2-4. The Asserted Claims of the ‘988, ‘694, ‘897, and ‘245 patents are invalid for at least the reasons discussed herein.

In addition to the prior art identified in the ‘988, ‘694, ‘897, and ‘245 patents, and particularly in the background of the invention sections of each patent and prosecution histories, at least the prior art references identified below are relevant to the invalidity of the ‘988, ‘694, ‘897, and ‘245 patents as either prior art under 35 U.S.C §§ 102 or 103. These references alone, or in combination, render each asserted claim of the ‘988, ‘694, ‘897, and ‘245 patents invalid under 35 U.S.C. § 102 and/or 35 U.S.C. § 103.

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
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| 2. U.S. Patent No. 4,310,726 to Asmuth (GSHFED_0002180-2189) | Feb. 4, 1980 | Jan. 12, 1982 | §§ 102(b) & (e) |
| 3. Paramvir Bahl et al., “RADAR: An In-Building RF-based User Location and Tracking System,” Microsoft Research, (2000. GSHFED_0002203-2212) | | 2000 | § 102(b) |
| 4. Paramvir Bahl et al. “A Software System for Locating Mobile Users: Design, Evaluation, and Lessons,” Microsoft Research, University of California at San Diego, 2000. (GSHFED_0000002190-2202) | | 2000 | § 102(b) |
| 5. U.S. Patent No. 7,440,755 to Balachandran et al. (GSHFED_0002213-2229) | Jun. 17, 2003 | Oct. 21, 2008 | §§ 102(b) & (e) |

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| 7. Per Bjorndahl, et al., "CME20 - A Total Solution for GSM Networks," Ericsson Review No., 3, 1991, pp. 72-79. (GSHFED_0002240-2247) | | 1991 | § 102(b) |
| 8. Bluesoft, Inc., Aeroscout, available at least as early as August, 2003 (*see* http://replay.waybackmachine.org/20030802052607/http://bluesoft-inc.com/wlan.asp, last accessed April 14, 2011). (GSHFED_0002248) | | Aug. 2003 | §§ 102(a) & (b) |
| 9. Eloise Brackenridge, "The New Urban Infrastructure: Cities and Telecommunications," University of Texas at Austin, Center for Research on Communication, Technology and Society, pp. 77-100. (GSHFED_0002249-2276 ) | | 1985 | § 102(b) |
| 10. Mary Buccafurno, "The Philadelphia Story," TE&M Special Report 911, pp. 68-72. (GSHFED_0002277-2280) | | Dec. 15, 1987 | § 102(b) |
| 11. California Legislature Senate Committee on Energy and Public Utilities and Joint Committee on Fire, Police, Emergency and Disaster Services, Joint Interim Hearing on The 911 Emergency Response System - An Overview of its Effectiveness, Los Angeles California, 1990. (GSHFED_0002281-2387) | | Nov. 21, 1990 | § 102(b) |
| 12. U.S. Patent No. 5,379,337 to Castillo et al. (GSHFED_0002388-2554) | Aug. 16, 1991 | Jan. 3, 1995 | §§ 102(b) & (e) |

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| 14. U.S. Patent No. 5,161,180 to Chavous (GSHFED_0002565-2577) | Oct. 19, 1990 | Nov. 3, 1992 | §§ 102(b) & (e) |
| 15. Yatin Chawathe et al., "A Case Study in Building Layered DHT Applications," Intel Research Seattle, University of California, San Diego, Intel Research Berkeley, ICSI, 2005. (GSHFED_0002578-2592) | | 2005 | § 102(a) |
| 16. Yu-Chung Cheng et al., "Accuracy Characterization for Metropolitan-scale Wi-Fi Localization" University of California, San Diego; Intel Research Seattle; Microsoft Corporation, 2005. (GSHFED_0002593-2605) | | Jan. 2005 | § 102(a) |
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| 18. U.S. Patent No. 3,881,060 to Connell et al. (GSHFED_0002614-2627) | June 4, 1973 | Apr. 29, 1975 | §§ 102(b) & (e) |
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| 21. Thomas Dayharsh et al., "Update on the National Emergency Number 911," IEEE Transactions on Vehicular Technology, Vol. VT-28, No. 4, November, pp. 292-297, 1979. (GSHFED_0002651-2656) | | Nov. 1979 | § 102(b) |

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| 23. Ernest DeNigris, et al., "Enhanced 911: emergency calling with a plus" Bell Laboratories Record, pp. 74-79. (March, 1980) (GSHFED_0002663-2668) | | 1980 | § 102(b) |
| 24. U.S. Patent No. 5,235,633 to Dennison et al. (GSHFED_0002669-2686) | Dec. 26, 1991 | Aug. 10, 1993 | §§ 102(b) & (e) |
| 25. U.S. Patent No. 7,116,988 to Dietrich et al. (GSHFED_0002687-2706) | Mar. 16, 2004 | Oct. 3, 2006 | §§ 102(e) |
| 26. U.S. Patent No. 7,433,696 to Dietrich et al. (GSHFED_0002707-2727) | May 18, 2004 | Oct. 7, 2008 | §§ 102(a) & (e) |
| 27. U.S. Patent No. 5,389,935 to Drouault et al. (GSHFED_0002728-2734) | Mar. 23, 1994 | Feb. 14, 1995 | §§ 102(b) & (e) |
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| 31. Ekahau, Inc., Ekahau Site Survey 1.0, available at least as early as October, 2003 (*see* http://replay.waybackmachine.org/20031008125411/http://www.ekahau.com/products/, http://replay.waybackmachine.org/20030807204446/http://www.ekahau.com/products/sitesurvey/, and http://replay.waybackmachine.org/20030801080918/http://www.ekahau.com/products/sitesurvey/ess10_why.html, last accessed April 14, 2011). (GSHFED_0002743, GSHFED_0002744-2745, GSHFED_0002746) | | 2003 | § 102(b) |

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| 37. U.S. Patent No. 6,674,403 to Gray, et al. (GSHFED_0002802-2821) | Sept. 5, 2002 | Jan. 6, 2004 | §§ 102(a), (b) & (e) |
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| 42. Jeffrey Hightower et al., "A Survey and Taxonomy of Location Systems for Ubiquitous Computing," University of Washington, 2001. (GSHFED_0002902-2930) | | Aug. 24, 2001 | § 102(b) |
| 43. William Honig et al., "The Realities of Service Creation on Switching Systems Through Attached Processors," XII International Switching Symposium, Vol. VI, pp. 51-54, (May 27-June 1, 1990). (GSHFED_0002931-2934) | | 1990 | §102(b) |
| 44. Paul Hunter, "The Sources of Innovation in New Jersey Bell Switching Services" Master of Science Thesis, Massachusetts Institute of Technology, (June 1991). (GSHFED_0002935-3039) | | June, 1991 | §102(b) |
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| 46. Ming-Hui Jin et al., "802.11-based Positioning System for Context Aware Applications," GLOBECOM, IEEE 2003. (GSHFED_0003555-3559) | | 2003 | § 102(b) |
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| 49. C. A. Kent et al., "Position Estimation of Access Points in 802.11 Wireless Network," Lawrence Livermore National Laboratory, 2004. (GSHFED_0003585-3594) | | Jan. 21, 2004 | §§ 102(a) & (b) |
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| 53. Anthony LaMarca et al., "Place Lab: Device Positioning Using Radio Beacons in the Wild," PERVASIVE 2005, LNCS 3468, pp. 116-133, (2005). (GSHFED_0003619-3636) | | 2005 | §§ 102(a) |
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| 55. U.S. Patent Application Publication No. 2009/0017841 to Lewis et al. (GSHFED_0003664-3670) | Jul 8, 2008 | Jan. 15, 2009 | §§ 102(b) & (e) |
| 56. U.S. Patent No. 7,130,642 to Lin (GSHFED_0003671-3684) | Mar. 2, 2004 | Oct. 31, 2006 | §§ 102(a) & (e) |

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| 58. U.S. Patent No. 7,519,372 to MacDonald et al. (GSHFED_0003706-3728) | Apr. 3, 2002 | Apr. 14, 2009 | §§ 102(b) & (e) |
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| 60. U.S. Patent No. 5,353,023 to Mitsugi (GSHFED_0003741-3772) | Jun. 25, 1992 | Oct. 4,1994 | §§ 102(b) & (e) |
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| 62. U.S. Patent No. 5,235,630 to Moody et al. (GSHFED_0003844-3850) | Apr. 17, 1991 | Aug. 10, 1993 | §§ 102(b) & (e) |
| 63. European Pat. App. EP1359714A2 to Moore et al. (GSHFED_0003851-3867) | May 2, 2003 | Nov. 5, 2003 | §§ 102(b) & (e) |
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| 68. U.S. Patent No. 7,299,058 to Ogino (GSHFED_0003891-3903) | Aug. 11, 2005 | Nov. 20, 2007 | § 102(e) |
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| 73. Canadian Pat. App. No. 2,056,203 to Reading et al. (GSHFED_0003942-3969) | Nov. 26, 1991 | July 1, 1992 | §§ 102(b) & (e) |
| 74. European Pat. App. EP0493896A2 to Reading et al. (GSHFED_0003970-3986) | Dec. 5, 1991 | July 8, 1992 | §§ 102(b) & (e) |
| 75. U.S. Patent No. 4,757,267 to Riskin (GSHFED_0003987-4023) | June 17, 1987 | July 12, 1988 | §§ 102(b) & (e) |

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| 81. U.S. Patent No. 7,373,154 to Sharony et al. (GSHFED_0004063-4069) | Dec. 7, 2006 | May 13, 2008 | §§ 102(a), (b), & (e) |
| 82. U.S. Patent No. 7,319,878 to Sheynblat et al. (GSHFED_0004084-4100) | Oct. 21, 2004 | Jan. 15, 2008 | §§ 102(a) &(e) |
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| 86. U.S. Patent No. 6,134,448 to Shoji et al. (GSHFED_0004189-4198) | Mar. 3, 1997 | Oct. 17, 2000 | §§ 102(b) & (e) |
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| 93. Texas Advisory Commission on Intergovernmental Relations, "Implementing 9-1-1 Systems in Texas: Legal and Institutional Background" (GSHFED_0004252-4312) | | June, 1987 | § 102(b) |
| 94. U.S. Patent No. 6,484,034 to Tsunehara et al. (GSHFED_0004313-4331) | Aug. 29, 2001 | Nov. 19, 2002 | §§ 102(b) & (e) |
| 95. U.S. Patent No. 6,990,351 to Tsunehara et al. (GSHFED_0004332-4341) | Feb. 19, 2002 | Jan. 24, 2006 | §§ 102(b) & (e) |
| 96. Bob Wallace, "Domino's delivers using new call routing service," Network World, Vol. 8, Number 32. (GSHFED_0004342-4343) | | Aug. 12, 1991 | § 102(b) |
| 97. U.S. Patent No. 7,130,646 to Wang (GSHFED_0004344-4358) | Feb. 14, 2003 | Oct. 31, 2006 | §§ 102(b) & (e) |
| 98. U.S. Patent No. 5,136,636 to Wegrzynowicz (GSHFED_0004359-4367) | Feb. 7, 1991 | Aug. 4, 1992 | §§ 102(b) & (e) |
| 99. WO 04/002185A1 to Wood et al. (GSHFED_0004368-4397) | June 19, 2003 | Dec. 31, 2003 | §§ 102(b) & (e) |
| 100. Alexandra Workman et. al., "International Applications of AT&T's Intelligent Network Platforms," AT&T Technical Journal, 1991, Volume 70, No. 34, pp. 44-57. (GSHFED_0004398-4413) | | 1991 | § 102(b) |
| 101. JP03-235562 to Yoshihiro et al. (GSHFED_000 4414-4424 ) | Feb. 13, 1990 | Oct. 21, 1991 | §§ 102(b) & (e) |
| 102.Balanchandran, A., Woelker, G.M., and Bahl P., "Wireless hotspots: current challenges and future directions," In proceedings of WMASH 2003, pp 1-9. (GSHFED_0009010-9018) | | Sept. 2003 | §§ 102(a) & (b) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 103. Battiti, R., Lo Cigno, R., Sabel, M., et al. "Wireless LANs: From WarChalking to open access networks." Mobile Networks & Applications 10 (3): 275-287. (GSHFED_0009019-9031) | | June 2005 | § 102(a) |
| 104. Byers, S., Kormann, D., "802.11B Access Point Mapping." Communications of the ACM, Vol. 46, No. 5, pp. 41-46 (May 2003). (GSHFED_0009102-9107) | | May 2003 | §§ 102(a) & (b) |
| 105. Frederickson, G. N., "Approximation Algorithms for Some Postman Problems." J. ACM 286, 3 (Jul. 1979), 538-554. (GSHFED_0009113-9129) | | July 1979 | §§ 102(a) & (b) |
| 106. Henderson, T., Kotz, D. and Abyzov, I., "The changing usage of a mature campus-wide wireless network." Proceeding of MobiCom 2004, pp 187-201. (GSHFED_0009159-9173) | | Sept. 2004 | § 102(a) |
| 107. Kirtner, J.L. and Anderson, H. R., "The application of land use cover data to wireless communication system design," In proceedings of the ESRI User Conference, 1998. (GSHFED_0009209-9224) | | 1998 | §§ 102(a) & (b) |
| 108. Letchner, J., Fox, D. and LaMarca, A., "Large-Scale Localization from Wireless Signal Strength," Proceedings of the National Conference on Artificial Intelligence (AAAI 2005). (GSHFED_0009278-9283) | | 2005 | § 102(a) |
| 109. Papadimitriou, C. H., (1967) "On the complexity of edge traversing." JACM 23, 3 (July 1976), 544-554. (GSHFED_0009297-9307) | | July 1976 | §§ 102(a) & (b) |
| 110. U.S. Patent No. 7,116,988 to Dietrich et al. (GSHFED_0002687-2706) | Mar. 16, 2004 | Oct. 3, 2006 | § 102(e) |
| 111. U.S. Patent No. 7,525,484 to Dupray et al. (GSHFED_0010987-11147) | Sept. 9, 1996 | April 28, 2009 (app. pub'd Sep. 20, 2001) | §§ 102(a), (b), & (e) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 112. U.S. Patent No. 7,764,231 to Karr et al. (GSHFED_0011148-11324) | Sept. 9, 1996 | July 27, 2010 (app. pub'd Mar. 12, 1998) | §§ 102(a), (b), & (e) |
| 113. U.S. Patent App. Pub. No. 2003/0043073 (Gray et al.) (GSHFED_0009308-9325) | Sept. 5, 2002 | March 6, 2003 | §§ 102(a), (b) & (e) |
| 114. J.I. Hong, et al., Privacy and Security in the Location-enhanced World Wide Web, In Proceedings of Fifth International Conference on Ubiquitous Computing: Ubicomp 2003 (Workshop on Ubicomp Communities: Privacy as Boundary Negotiation), 2003. (GSHFED_0008423-8427) | | 2003 | §§ 102(a) & (b) |
| 115. William G. Griswold, et al., ActiveCampus: Experiments in Community-Oriented Ubiquitous Computing, Computer, v.37 n.10, p.73-81, October 2004. (GSHFED_0008437-8445) | | October 2004 | § 102(a) |
| 116. U.S. Patent No. 6,990,428 to Kaiser et al. (GSHFED_0010900-10924) | July 28, 2003 | Jan. 24, 2006 | §§ 102(a) & (e) |
| 117. C. Komar & C. Ersoy, "Location Tracking and Location Based Service Using IEEE 802.11 WLAN Infrastructure," European Wireless 2004, Feb. 24-27, 2004. GSHFED_0010980-10986 | | Feb. 24-27, 2004 | § 102(a) |
| 118. U.S. Patent No. 6,664,925 to Moore et al. (GSHFED_0010505-10518) | May 2, 2002 | Dec. 16, 2003 | §§ 102(a), (b) & (e) |
| 119. Anthony La Marca, et al., Finding Yourself: Experimental location technology relies on Wi-Fi and cellphone signals instead of orbiting satellites, IEEE Spectrum at 51-54, December 2004. (GSHFED_0008428-8430) | | December 2004 | § 102(a) |
| 120. Anthony La Marca, et al., Place Lab's First Step: A Location-Enhanced Conference Guide, UbiComp 2003, Seattle, 2003. (GSHFED_0008431-8433) | | 2003 | §§ 102(a) & (b) |
| 121. A. LaMarca, et al., "PlaceLab: Bootstrapping Where-ware" (2003). (GSHFED_0008456-8474) | | 2003 | § 102(a) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 122. U.S. Patent App. Pub. No. 2004/0072577 (Myllymaki et al.) (GSHFED_0010925-10935) | June 20, 2003 | Apr. 15, 2004 | §§ 102(a) & (e) |
| 123. Bill Schilit, Location Enhanced Web Services, University of Washington, CSE Colloquia - 2004 Series, Intel Research, Seattle, 2003. (Video and Transcript). (GSHFED_0010945-10979, GSHFED_0009032-9089) | | 2003 | §§ 102(a) & (b) |
| 124. U.S. Pat. No. 6,754,488 to Won et al. (GSHFED_0010936-10944 ) | Mar. 1, 2002 | June 22, 2004 | §§ 102(a) & (e) |
| 125. U.S. Pat. No. 7,155,239 to Zeng et al. (GSHFED_0010665-10675) | May 28, 2004 | Dec. 26, 2006 (app. pub'd Dec. 1, 2005) | § 102(a) & (e) |

In addition, the prior art references identified in the '988, '694, '897, and '245 patents are relevant to the invalidity of one or more patents-in-suit as either prior art under 35 U.S.C §§ 102 and/or 103. Those references include, but are not limited to, the following:

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 126. U.S. Patent No. 4,415,771 (Martinez) (GSHFED_0010444-10458) | April 3, 1981 | Nov. 1983 | §§ 102(a), (b) & (e) |
| 127. U.S. Patent No. 5,315,636 (Patel) (GSHFED_0010459-10474) | June 28, 1991 | May 1994 | §§ 102(a), (b) & (e) |
| 128. U.S. Patent No. 5,564,121 (Chow, et al.) (GSHFED_0010475-10480) | Aug. 18, 1994 | Oct. 1996 | §§ 102(a), (b) & (e) |
| 129. U.S. Patent No. 5,940,825 (Castelli, et al.) (GSHFED_0010481-10496) | Oct. 4, 1996 | Aug. 1999 | §§ 102(a), (b) & (e) |
| 130. U.S. Patent No. 6,272,405 (Kubota, et al.) (GSHFED_0010497-10504) | July 8, 1999 | Aug. 2001 | §§ 102(a), (b) & (e) |
| 131. U.S. Patent No. 6,678,611 (Khavakh, et al.) (GSHFED_0010539-10572) | Sept. 27, 2002 | Jan. 2004 | §§ 102(a), (b) & (e) |
| 132. U.S. Patent No. 6,799,049 (Zellner, et al.) (GSHFED_0010573-10584) | Dec. 19, 2000 | Sept. 2004 | §§ 102(a) & (e) |
| 133. U.S. Patent No. 6,862,524 (Nagda, et al.) (GSHFED_0010585-10609) | May 9, 2003 | March 2005 | §§ 102(a) & (e) |
| 134. U.S. Patent No. 6,888,811 (Eaton, et al.) (GSHFED_0010610-10624) | Sept. 24, 2001 | May 2005 | §§ 102(a) & (e) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 135. U.S. Patent No. 6,978,023 (Dacosta) (GSHFED_0010625-10642 ) | Mar. 25, 2003 | Dec. 2005 | §§ 102(a) & (e) |
| 136. U.S. Patent App. Pub. No. 2003/0125045 (Riley, et al.) (GSHFED_0000476-509) | Mar. 12, 2002 | July 2003 | §§ 102(a), (b) & (e) |
| 137. U.S. Patent App. Pub. No. 2003/0146835 (Carter) (GSHFED_0000510-527) | Feb. 21, 2003 | Aug. 2003 | §§ 102(a), (b) & (e) |
| 138. U.S. Patent App. Pub. No. 2003/0225893 (Roese, et al.) (GSHFED_0000528-560) | Feb. 28, 2003 | Dec. 2003 | §§ 102(a), (b) & (e) |
| 139. U.S. Patent App. Pub. No. 2004/0019679 (E, et al.) (GSHFED_0000561-588) | July 24, 2002 | Jan. 2004 | §§ 102(a), (b) & (e) |
| 140. U.S. Patent App. Pub. No. 2004/0039520 (Khavakh, et al.) (GSHFED_0000589-626) | Aug. 28, 2003 | Feb. 2004 | §§ 102(a), (b) & (e) |
| 141. U.S. Patent App. Pub. No. 2004/0058640 (Root, et al.) (GSHFED_0000627-636) | Sept. 19, 2003 | March 2004 | §§ 102(a) & (e) |
| 142. U.S. Patent App. Pub. No. 2004/0087317 (Caci) (GSHFED_0000637-660) | Oct. 20, 2003 | May 2004 | §§ 102(a) & (e) |
| 143. U.S. Patent App. Pub. No. 2004/0124977 (Biffar) (GSHFED_0000661-675) | Mar. 6, 2001 | July 2004 | §§ 102(a) & (e) |
| 144. U.S. Patent App. Pub. No. 2004/0205234 (Barrack, et al.) (GSHFED_0000676-699) | Dec. 31, 2003 | Oct. 2004 | §§ 102(a) & (e) |
| 145. U.S. Patent App. Pub. No. 2005/0020266 (Backes, et al.) (GSHFED_0000700-787) | Feb. 18, 2004 | Jan. 2005 | §§ 102(a) & (e) |
| 146. U.S. Patent App. Pub. No. 2005/0037775 (Moeglein, et al.) (GSHFED_0000788-818) | June 25, 2004 | Feb. 2005 | §§ 102(a) & (e) |
| 147. U.S. Patent App. Pub. No. 2005/0108306 (Martizano Catalasan) (GSHFED_0000819-838) | Dec. 7, 2004 | May 2005 | §§ 102(a) & (e) |
| 148. U.S. Patent App. Pub. No. 2005/0164710 (Beuck) (GSHFED_0000839-852) | Jan. 22, 2004 | July 2005 | §§ 102(a) & (e) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 149. U.S. Patent App. Pub. No. 2005/0192024 (Sheynblat) (GSHFED_0000853-877) | Apr. 17, 2003 | Sept. 2005 | §§ 102(a) & (e) |
| 150. U.S. Patent App. Pub. No. 2005/0227711 (Orwant, et al.) (GSHFED_0000878-895) | Mar. 31, 2004 | Oct. 2005 | §§ 102(a) & (e) |
| 151. U.S. Patent App. Pub. No. 006/0009235 (Sheynblat, et al.) (GSHFED_0000896-913) | Oct. 21, 2004 | Jan. 2006 | §§ 102(a) & (e) |
| 152. "Delta Encoding," Wikipedia, retrieved from http://en.wikipedia.org/wiki/Delta_encoding, 2006. (GSHFED_0001835-1839) | | 2006 | § 102(a) |
| 153. Griswold, et al., "ActiveCampus--Sustaining Educational Communities through Mobile Technology." UCSD CSE Technical Report #CS200-0714, 2002. (GSHFED_0001840-1858) | | 2002 | §§ 102(a) & (b) |
| 154. Hellebrandt, M., et al., "Estimating Position and Velocity of Mobile in a Cellular Radio Network," IEEE Transactions on Vehicular Technology, vol. 46, No. 1, Feb. 1997. (GSHFED_0001862-1868) | | Feb. 1997 | §§ 102(a) & (b) |
| 155. Hazas, M., et al., "Location-Aware Computing Comes of Age," IEEE, vol. 37, Feb. 2004. (GSHFED_0001859-1861) | | Feb. 2004 | §§ 102(a) & (b) |
| 156. "Huffman Coding", Wikipedia, retrieved from http://en.wikipedia.org/wiki/Huffman_coding, 2006. (GSHFED_0001869-1878) | | 2006 | § 102(a) |
| 157. Kawabata, K., "Estimating Velocity Using Diversity Reception," IEEE, 1994. (GSHFED_0001882-1885) | | 1994 | §§ 102(a) & (b) |
| 158. Kim, M., et al., "Risks of using AP locations discovered through war driving," Lecture Notes in Computer Science, vol. 3968, 2006. (GSHFED_0001886-1900) | | 2006 | § 102(a) |

| Prior Art Reference | Filing/Priority Date | Issue/ Publication Date | Applicability |
|---|---|---|---|
| 159. Kirsner, S., "One more way to find yourself," The Boston Globe, May 23, 2005. Retrieved from www.boston.com. (GSHFED_0001901-1903) | | May 23, 2005 | § 102(a) |
| 160. Krumm, J., et al., "LOCADIO: Inferring Motion and Location from Wi-Fi Signal Strengths," First Annual International Conference on Mobile and Ubiquitous Systems: Networking and Services, Aug. 2004. (GSHFED_0001904-1913) | | Aug. 2004 | § 102(a) |
| 161. Kwan, M., "Graphic Programming Using Odd or Even Points," Chinese Math. 1, 1962. (GSHFED_0001914-1920) | | 1962 | §§ 102(a) & (b) |
| 162. LaMarca, A., et al., "Place Lab: Device Positioning Using Radio Beacons in the Wild," Intel Corporation, 2004. (GSHFED_0001921-1938) | | 2004 | §§ 102(a) & (b) |
| 163. LaMarca, A., et al., "Self-Mapping in 802.11 Location Systems," Intel Corporation, 2005. (GSHFED_0001939-1956) | | 2005 | § 102(a) |
| 164. "Terminal Equipment and Protocols for Telematic Services: Information Technology-Digital Compression and Coding of Continuous-Tome Still Images—Requirements and Guidelines," International Telecommunication Union, Sep. 1992. (GSHFED_0001970-2155) | | Sept. 1992 | §§ 102(a) & (b) |

## II. ANTICIPATION

### A. The '988 and '694 Patents

The '988 patent is directed to a "Wi-Fi location server" that includes a "database of Wi-Fi access points." Similarly, the '694 patent is directed to "[a] database of Wi-Fi access points." The '988 and '694 patents purport on their face to claim priority to provisional patent application no. 60/623,108 filed on October 29, 2004, however, numerous elements disclosed and claimed in

the ‘988 and ‘694 patents are not disclosed in the ‘108 provisional application. All of the claims of the ‘988 and ‘694 patents are anticipated by several prior art references. For example, and without limitation, all of the Asserted Claims of the ‘988 patent and the ‘694 patent are anticipated by U.S. Patent Nos. 7,130,646 (“Wang ‘646 patent”), and 7,257,411 (“Gwon ‘411 patent”), as well as by the PlaceLab project/initiative, and the multiple references describing PlaceLab (including, but not limited to, references 52, 78, 79, 114, 119, 120, 121, and 123). Attached hereto as Exhibit A is a chart setting forth a detailed correspondence between the asserted claims of the ‘988 and ‘646 patent and certain of these anticipating references.

**B. The ‘897 patent and ‘245 Patents**

The ‘897 and ‘245 patents are directed to “a method of calculating the position of WiFi-enabled devices,” and “[a] method of locating a user-device having a Wi-Fi radio,” respectively. The ‘245 patent also purports on its face to claim priority to the ‘108 provisional application, however, numerous elements disclosed and claimed in the ‘245 patent are not disclosed in the provisional application. The ‘897 patent purports on its face to claim priority to provisional patent application no. 60/654,811 filed on February 22, 2005, and is a continuation-in-part of the ‘245 patent, however, elements disclosed and claimed in the ‘897 patent are not disclosed in the ‘108 nor ‘811 provisional applications nor the ‘245 patent.

The Asserted Claims, claims 1 - 4 of the ‘897 patent and claims 1, 2, 4-6 and 8 of the ‘245 patent, are anticipated by for example, and without limitation, at least the following references as shown by the charts attached hereto as Exhibit A: the Wang ‘646 patent, the Gwon ‘411 patent, as well as by the PlaceLab project/initiative and the multiple references describing PlaceLab. U.S. Patent App. Pub. No. 2003/0043073 (“Gray et al.”) (issued as U.S. Patent No. 6,674,403 to Gray, et al.) anticipates the asserted claims of the ‘245 patent. In addition, U.S. Patent No. 7,440,755 (“Balachandran ‘755 patent”), U.S. Patent No. 7,389,114 (“Ju ‘114

patent"), U.S. Patent No. 6,664,925 to Moore et al. ("Moore '925 patent"), U.S. Patent No. 7,155,239 to Zeng et al. ("Zeng '239 patent"), "802.11-based Positioning System for Context Aware Applications" by Ming-Hui Jin, and "Location Tracking and Location Based Service Using IEEE 802.11 WLAN Infrastructure" by C. Komar et al. ("Komar") each anticipate the '897 patent.

## III. OBVIOUSNESS

### A. The '988 and '694 Patents

As discussed above, the '988 patent is directed to a "Wi-Fi location server" that includes a "database of Wi-Fi access points," and the '694 patent is directed to "[a] database of Wi-Fi access points." There are many disclosures in the prior art of a server having a database of Wi-Fi access points, or a database of such Wi-Fi access points. The calculation of the locations of Wi-Fi access points, the adding of such access points to a database, and the updating of the database over time were all well known concepts before the earliest filing date of any of the patents-in-suit.

The background of the invention section in each of the patents describes anticipatory prior art, but the inventors attempt to describe distinctions over the prior art that relate to the manner of collecting Wi-Fi access points by systematically driving according to a Chinese Postman algorithm, and describe this required systematic manner of collecting data as providing "reference symmetry" and avoiding "arterial bias" in determining the location of access points.

As discussed in connection with deficiencies under 35 U.S.C. § 112, the "reference symmetry" and "avoid arterial bias" limitations are unclear, render the boundaries or scope of the claims uncertain and indefinite, and lack support in the specification. However, notwithstanding the presence of these and other indefinite terms in the claims, it is clear that the prior art has completely anticipated creating databases of Wi-Fi access points with location information

obtained from traversing an area (whether in a systematic fashion or not), including but not limited to driving all the way around a block or building to identify more accurately the location of access points within the building(s). The prior art describes all of these features in many individual prior art references identified in the tables of prior art above. In addition, many of the references go into detail on certain features found in the claims. None of the asserted claims in the '988 and '694 patents represents a new combination of old elements or limitations, or any new elements beyond what is taught in individual references identified in this pleading or identified in references taken individually or together.

For example, in addition to the prior art described as anticipating the asserted claims of the '988 and '694 patents, all asserted claims of the '988 and '694 patents are rendered obvious, and therefore invalid under 35 U.S.C. § 103, by at least the following references taken alone or in combination with other references in the tables of prior art, including the anticipatory references: the Balachandran '755 patent, the Ju '114 patent, the Gwon '411 patent, the Wang '646 patent, "MoteTrack: A Robust, Decentralized Approach to RF-Based Location Tracking" (2005) by Konrad Lorincz et al. ("Lorincz"), Place Lab: Device Positioning Using Radio Beacons in the Wild" (2005) by Anthony LaMarca ("LaMarca") and the Shipley references "Open WLANs the early results of war driving" and "802.11b War Driving and LAN Jacking".

It would have been well within the grasp of a person of ordinary skill in the art at the time of the alleged invention to combine these references. The Wang '646 patent discloses a method of determining the location of a wireless device based on information provided by an access point in a wireless local area network. The position of the access point is determined and then used in the identification of the wireless device's location. The Lorincz reference likewise discloses an approach to computing location, also relying on a database of location information

for access points in target areas, and a clustering algorithm to determine a centroid of the data. The LaMarca reference discloses a radio beacon based approach to location, which also utilizes a database of location information and recognizes war-driving as one method of gathering location information. Additional references describe gathering location information for Wi-Fi and other access points, including those described in the anticipation section and in the tables above. The Peter Shipley references describe the effectiveness of war driving and driving all the way around a building for improving the accuracy of Wi-Fi access point location measurement. These references, standing alone or in combination with each other, with the anticipatory references, or with other references within the tables of prior art that teach all or the remaining elements of the asserted claims of the '988 and '694 patents, demonstrate that the asserted claims are obvious under 35 U.S.C. § 103.

Attached hereto as Exhibit A are illustrative charts detailing the correspondence between the asserted claim elements and, respectively, the Wang '646 patent, the Lorincz reference, and the LaMarca reference. Each of these references renders the claims obvious alone or in combination with other prior art identified herein.

In addition, "A Toolkit for Automatically Construction Outdoor Radio Maps" by Kay Connelly et al. ("Connelly"), "Extracting Places from Traces of Locations" by Jong Hee Kang et al. ("Kang"), "Location Determination of a Mobile Device Using IEEE 802.11b Access Point Signals" by Siddhartha Saha et al. ("Saha"), the Gwon '114 patent, the Balachandran '755 patent, EP 1,359,714, and CA 2,056,203, for example, are prior art as set forth above and render the '988 and '694 patents invalid under 35 U.S.C. § 103 alone or in combination with each other or other prior art identified herein. All of the references identified in the tables of prior art

constitute references under at least 35 U.S.C. § 103. Further citations to prior art under § 103 are found in Exhibit A.

### B. The '897 and '245 Patents

The '897 and '245 patents, as discussed above, relate to a method of determining the location a Wi-Fi enabled device. The claimed methodologies use signal strength information received from Wi-Fi access points, and the calculated location for those Wi-Fi access points. At the time of the filing of the patents-in-suit, it was well known in the art that the location of a device could be determined using triangulation and other calculation techniques using signal strength and other information received from access points, such as Wi-Fi access points, cellular towers, Loran towers, and other access points. Many of the references identified in the tables of prior art detail such location determining techniques and several anticipatory references have been specifically identified and illustratively charted herein that show correlation between these references and the asserted claim elements. Any of these anticipatory references, standing alone or in combination with other references may also be used to demonstrate the obviousness of the invention.

As noted above with respect to the '988 and '694 patents, the inventors' disclosed and claimed methodologies for gathering the data about Wi-Fi access points that are used to calculate the locations of those Wi-Fi access points were well known and in use at the time of the alleged invention. Plaintiff cannot, therefore, differentiate the claims of the '897 or '245 patents based on those data-gathering methodologies.

Additional illustrative charts showing how various references within the tables of prior art references show the presence of the elements and limitations of the Asserted Claims of the '897 and '245 patents are shown in the charts attached at Exhibit A. Any prior art reference in the tables may be used to demonstrate the obviousness of the asserted claims of the '897 or '245

patents in combination with the knowledge of one of ordinary skill in the art, in combination with one of the anticipatory references, or in combination with one or more other references describing the remaining elements of the asserted claims. All of the references identified in the tables of prior art constitute references under at least 35 U.S.C. § 103. The references show the scope and content of the prior art. In addition to the charted references, additional examples include:

- Bluesoft, Inc.'s Aeroscout, Ekahau's Positioning Engine 2.1, Site Survey 1.0, and Client 3.0, PanGo's Proximity Platform and Mobile Applications Suite, and Newbury Networks' LocaleServer and LocalePoints products, for example, as well as other references in the table, provide location-based database servers with recorded position information for determining the location of a Wi-Fi enabled device by referencing the location of the device in relation to known access points. Each reference also provides client applications for use on mobile devices, where the applications would record signal strength information of detected access points, and then access the provided server to determine location based on various number of access points and different location equations and algorithms.
- WO 03/021851 to Gray et al. and WO 04/002185A1 to Wood et al., for example, as well as other references in the table, describe, *inter alia*, a database of Wi-Fi access points, calculating the signal strength of the messages received by Wi-Fi access points to determine location of a wireless device, adding records for newly-discovered Wi-Fi access points to a database, using predefined rules to determine whether an observed Wi-Fi access point should be included or

excluded from a set of Wi-Fi access points, based on the number of Wi-Fi access points within range, choosing a corresponding location determination algorithm from a plurality of location determination algorithms, updating of access point location, filtering data collected, and filtering data used in positioning.

- "Java and GIS"," Parts 1 and 2 by Spielman et al., for example, as well as other references in the table, describe, *inter alia*, using a handset to contact a remote location server for information about location device location, based on signal strength readings from the device.
- Chris Hurley et al., "War Driving Drive, Detect, Defend A Guide to Wireless Security"," for example, as well as other references in the table, describes, *inter alia*, methods of driving an area to collect information about the locations of Wi-Fi access points, filtering the collected information, and adding information about previously known and newly discovered access points to a database.
- U.S. Patent No. 7,373,154 to Sharony et al. and U.S. Patent No. 7,426,197 to Schotten et al., for example, as well as other references in the table, describe, *inter alia*, a method and apparatus for determining a location of a wireless device within an environment. The device receives identifying information from a transponder. The references disclose a location database that may be stored in the memory of the wireless device. They also disclose a coverage map associated with each radio receiver that records signal strength data defined out to a threshold signal strength level.
- U.S. Patent No. 7,116,988 to Dietrich et al. and U.S. Patent No. 7,433,696 to Dietrich et al., for example, as well as other references in the table, describe, *inter*

*alia*, methods, apparatuses, and systems directed to a wireless node location mechanism that uses a signal strength weighting metric to improve the accuracy of estimating the location of a wireless node based on signals detected among a plurality of radio transceivers. They also teach maintaining a database of strength signals and wireless node identifiers, and a RF physical model of the coverage area associated with the environment.

- U.S. Patent No. 7,319,878 to Sheynblat et al., for example, as well as other references in the table, describe, *inter alia*, a method for determining the position of a base station in a wireless communication network. Sheynblat also discloses a database of location information that can be updated, a calibration system, and the use of GPS, CDMA and Advanced Forward Link Trilateration.
- U.S. Patent No. 7,299,058 to Ogino, for example, as well as other references in the table, describe, *inter alia*, a method for determining the position of a radio device by calculating error degradation quantities on varying distances.
- U.S. Patent No. 6,664,925 to Moore et al., for example, as well as other references in the table, describe, *inter alia*, the use of strength signal measurements for locating a mobile computer connected to a wireless access point in a computer network. Moore also teaches compiling a database of access point locations.

Further citations to prior art under § 103 are found in Exhibit A.

## IV. ADDITIONAL BASES FOR INVALIDITY

### A. The patents-in-suit are invalid for failure to comply with the definiteness requirement of 35 U.S.C. § 112, ¶ 2.

The following patent claims are invalid under 35 U.S.C. § 112, ¶ 2 because they fail to particularly point out and distinctly claim the subject matter which applicant regards as the invention:

- Claims 1 - 3 of the '988 patent;
- Claims 1 and 2 of the '694 patent;
- Claims 1 - 4 of the '897 patent; and
- Claims 1, 2, 4 - 6, and 8 of the '245 patent.

Specifically, the following terms are indefinite within the meaning of § 112, ¶ 2, because one skilled in the art would not understand the bounds of the claims in which they appear when read in light of the specification:

1. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area" ('988, claim 1);
2. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point … so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information" ('988, claim 1);
3. "avoids arterial bias" ('988, claim 1) and "avoid arterial bias" ('694, claim 1);
4. "logic" associated with the "computer implemented logic to add records to the database for newly-discovered Wi-Fi access points" ('988 patent, claim 1);

5. "logic" associated with the "computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points" ('988 patent, claim 1);

6. "logic" associated with the "computer-implemented clustering logic to identify position information based on error prone GPS information" ('988 patent, claim 2);

7. "logic" associated with the "the clustering logic includes logic to determine a weighted centroid position for all position information reported for an access point" ('988 patent, claim 3);

8. "logic" associated with the "the clustering logic includes … logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position and excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points" ('988 patent, claim 3);

9. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point" ('694 patent, claim 1);

10. "wherein the database records for substantially all Wi-Fi access points in the target area provide reference symmetry within the target area" ('694 patent, claim 1);

11. "said chosen algorithm being suited for the number of identified Wi-Fi access points" ('245 patent, claim 1);

12. "using the recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points" ('897 patent, claim 1); and

13. "rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point" ('897 patent, claim 3).

Because each asserted independent claim is indefinite and therefore invalid, all claims depending from them are also indefinite and invalid.

In addition, claim 1 of the '988 is indefinite and invalid under 35 U.S.C. § 112, ¶ 2 because it impermissibly recites both apparatus and method limitations. Claim 1 of the '694 patent is invalid for the same reason. Claim 1 in each patent is directed to a database (an apparatus), which includes "substantially all Wi-Fi access points in the target area." In both patents, the calculated position information must be "obtained from recording multiple readings of the Wi-Fi access point." Both patents thus claim a database of Wi-Fi access points and a method of keeping that database up-to-date to include substantially all access points in the target area.

To date, the court has not construed the asserted claims of the patents-in-suit. Google reserves the right to supplement or amend its preliminary indefiniteness contentions as appropriate.

**B. The patents-in-suit are not enabled.**

The following patent claims are not enabled under 35 U.S.C. § 112, ¶ 1 because the specification does not teach a person having ordinary skill in the art how to make and use the full scope of the claimed invention without undue experimentation:

- Claims 1 - 3 of the '988 patent;
- Claims 1 and 2 of the '694 patent;
- Claims 1 - 4 of the '897 patent; and
- Claims 1, 2, 4 - 6, and 8 of the '245 patent.

Specifically, the specifications of the patents-in-suit do not enable the following claim elements:

1. "computer implemented logic to add records to the database for newly-discovered Wi-Fi access points" ('988 patent, claim 1);
2. "computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points" ('988 patent, claim 1);
3. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area" ('988, claim 1);
4. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point … so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information" ('988, claim 1);

5. "computer-implemented clustering logic to identify position information based on error prone GPS information" ('988 patent, claim 2);

6. "the clustering logic includes logic to determine a weighted centroid position for all position information reported for an access point" ('988 patent, claim 3);

7. "the clustering logic includes … logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position and excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points" ('988 patent, claim 3);

8. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point" ('694 patent, claim 1);

9. "the database records for substantially all Wi-Fi access points in the target area provide reference symmetry within the target area" ('694 patent, claim 1);

10. "using the recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points" ('897 patent, claim 1);

11. "the predefined rules include rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point" ('897 patent, claim 3);

12. "WiFi access points having a recorded location within a predefined threshold distance of the reference point are included in the set" ('897 patent, claim 3);

13. "WiFi access points having a recorded location in excess of the predefined threshold distance of the reference point are excluded from the set" ('897 patent, claim 3); and

14. "based on the number of Wi-Fi access points identified via received messages, choosing a corresponding location-determination algorithm from a plurality of location-determination algorithms, said chosen algorithm being suited for the number of identified Wi-Fi access points" ('245 patent, claim 1).

### C. The patents-in-suit lack the written description required by 35 U.S.C. § 112, ¶ 1.

The following patent claims do not comply with the written description requirement of 35 U.S.C. § 112, ¶ 1 because the disclosure of the pertinent application does not convey to those skilled in the art that the inventors invented what is claimed, *i.e.*, that they had possession of the claimed subject matter, as of the filing date:

- Claims 1 - 3 of the '988 patent;
- Claims 1 and 2 of the '694 patent;
- Claims 1 - 4 of the '897 patent; and
- Claims 1, 2, 4 - 6, and 8 of the '245 patent.

Specifically, the written description requirement is not met as to the following claim elements:

1. "computer implemented logic to add records to the database for newly-discovered Wi-Fi access points" ('988 patent, claim 1);

2. "computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points" ('988 patent, claim 1);

3. "computer-implemented clustering logic to identify position information based on error prone GPS information" ('988 patent, claim 2);

4. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings have reference symmetry relative to other Wi-Fi access points in the target area" ('988, claim 1);

5. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point … so that the calculation of the position of the Wi-Fi access point avoids arterial bias in the calculated position information" ('988, claim 1);

6. "the clustering logic includes logic to determine a weighted centroid position for all position information reported for an access point" ('988 patent, claim 3);

7. "the clustering logic includes … logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position and excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points" ('988 patent, claim 3);

8. "recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point" ('694 patent, claim 1);

9. "the database records for substantially all Wi-Fi access points in the target area provide reference symmetry within the target area" ('694 patent, claim 1);

10. "using the recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points" ('897 patent, claim 1);

11. "the predefined rules include rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point" ('897 patent, claim 3);
12. "WiFi access points having a recorded location within a predefined threshold distance of the reference point are included in the set" ('897 patent, claim 3);
13. "WiFi access points having a recorded location in excess of the predefined threshold distance of the reference point are excluded from the set" ('897 patent, claim 3);
14. "calculating the signal strength of the messages received by the Wi-Fi access points" ('245 patent, claim 1); and
15. "choosing a corresponding location-determination algorithm from a plurality of location-determination algorithms, said chosen algorithm being suited for the number of identified Wi-Fi access points" ('245 patent, claim 1).

**D. The patents-in-suit are invalid for failure to comply with the best mode requirement.**

Google is informed and believes, and on that basis alleges, that the inventors of each patent-in-suit possessed a best mode for practicing the invention at the time each application was filed, and that the written description of each patent does not disclose the best mode for practicing the invention known to the inventors such that a person of ordinary skill in the art could practice it. Google is therefore informed and believes, and on that basis alleges, that the following patent claims are invalid for failure to comply with the best mode requirement of 35 U.S.C. § 112, ¶ 1:

- Claims 1 - 3 of the '988 patent;
- Claims 1 and 2 of the '694 patent;
- Claims 1 - 4 of the '897 patent; and

- Claims 1, 2, 4 - 6, and 8 of the ‘245 patent.

Specifically, Google is informed and believes, and on that basis alleges, that the best mode requirement is not met as to the following claim limitations:

1. “computer implemented logic to add records to the database for newly-discovered Wi-Fi access points” (‘988 patent, claim 1);

2. “computer logic including logic to recalculate position information for Wi-Fi access points previously stored in the database to utilize position information for the newly-discovered readings of previously stored Wi-Fi access points” (‘988 patent, claim 1);

3. “computer-implemented clustering logic to identify position information based on error prone GPS information” (‘988 patent, claim 2);

4. “the clustering logic includes logic to determine a weighted centroid position for all position information reported for an access point” (‘988 patent, claim 3);

5. “the clustering logic includes … logic to identify position information that exceeds a statistically-based deviation threshold amount away from the centroid position and excludes such deviating position information from the database and from influencing the calculated positions of the Wi-Fi access points” (‘988 patent, claim 3);

6. “recording multiple readings of the Wi-Fi access point at different locations around the Wi-Fi access point so that the multiple readings avoid arterial bias in the calculated position information of the Wi-Fi access point” (‘694 patent, claim 1);

7. “using the recorded location information for each of the observed WiFi access points in conjunction with predefined rules to determine whether an observed WiFi access point should be included or excluded from a set of WiFi access points” (‘897 patent, claim 1);

8. "the predefined rules include rules to determine a reference point and to compare the recorded location information for each of the observed WiFi access points to the reference point" ('897 patent, claim 3);

9. "WiFi access points having a recorded location within a predefined threshold distance of the reference point are included in the set" ('897 patent, claim 3);

10. "WiFi access points having a recorded location in excess of the predefined threshold distance of the reference point are excluded from the set" ('897 patent, claim 3); and

11. "choosing a corresponding location-determination algorithm from a plurality of location-determination algorithms, said chosen algorithm being suited for the number of identified Wi-Fi access points" ('245 patent, claim 1).

* * *

Google reserves its right to supplement or amend its contentions based upon further investigation, discovery, the Court's claim construction rulings, or as otherwise warranted.

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GOOGLE, INC.

By its attorneys,

/s/ Susan Baker Manning

Jonathan M. Albano, BBO # 013850
jonathan.albano@bingham.com
BINGHAM McCUTCHEN LLP
One Federal Street
Boston, MA 02110-1726, U.S.A.
617.951.8000

William F. Abrams
william.abrams@bingham.com
BINGHAM McCUTCHEN LLP
1900 University Avenue
East Palo Alto, CA 94303-2223
650.849.4400

Robert C. Bertin
robert.bertin@bingham.com
Susan Baker Manning
susan.manning@bingham.com
BINGHAM McCUTCHEN LLP
2020 K Street, NW
Washington, DC 20006-1806
202.373.6000

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/s/ Susan Baker Manning
Susan Baker Manning